

**Notice of Allowability**

Application No.

09/914,417

Applicant(s)

STRAUSSNIGG ET AL.

Examiner

Art Unit

Jefferey F Harold

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 8/2/2004.
2. ☒ The allowed claim(s) is/are 1-18 and 20-22.
3. ☒ The drawings filed on 1/6/2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

**DETAILED ACTION**

**EXAMINER'S AMENDMENT**

1. Authorization for this examiner's amendment was given in a telephone interview with Faustino Lichauco on September 20, 2004.
2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

- (i) claim 18, line 6 remove “;” and insert -.-
- (ii) claim 21, line 3, insert “.” after –thereof-

***Allowable Subject Matter***

3. ***Claims 1-18 and 20-22*** are allowed.
4. The following is an examiner's statement of reasons for allowance:

Regarding **claim 1**, the prior art of record discloses a circuit arrangement for two-wire/four-wire conversion in a DMT system, which is connected to a digital reception path, and also an analog transmission/reception path and which has an echo cancellation device in the time domain, the arrangement having a device for adaptation of the echo cancellation, however, the prior art of record fails to disclose or fairly suggest wherein the echo cancellation is done in the frequency domain, the echo cancellation device is nonlinear; and the device for adaptation of the echo cancellation

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has a first linear model, a nonlinear model and also a second linear model; and the coefficients of the nonlinear model which are determined in the device for adaptation of the echo cancellation can be transferred to a nonlinear unit of the echo cancellation device.

Regarding **claim 7**, the prior art of record discloses a method for attenuating echo signals in a circuit arrangement for two-wire/four-wire conversion of a signal generated by multicarrier modulation with orthogonal sub-channels, the modeling being effected in the frequency domain of the signal, however, the prior art of record fails to disclose or fairly suggest wherein the echo cancellation is effected in the time domain of the signal, the echo cancellation device is nonlinear; and the device for adaptation of the echo cancellation has a first linear model, a nonlinear model and also a second linear model; and the coefficients of the nonlinear model which are determined in the device for adaptation of the echo cancellation are transferred to a nonlinear unit of the echo cancellation device.

Regarding **claim 12**, the prior art of record discloses a circuit arrangement for echo cancellation in a DMT system, the circuit arrangement comprising: a device for adaptive echo cancellation in the frequency domain, however, the prior art of record fails to disclose or fairly suggest wherein the device is nonlinear and is connected between a digital reception path and a digital transmission path of the DMT system and having first and second linear models, and a nonlinear model configured to determine coefficients for adaptive echo cancellation, and an echo-cancellation device having a

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nonlinear unit in communication with the nonlinear model of the nonlinear device for receiving the coefficients therefrom.

Regarding **claim 18**, the prior art of record discloses a method for attenuating an echo of a signal generated by multicarrier modulation with orthogonal sub-channels, the method comprising: in the frequency domain of the signal, adaptively generating a nonlinear model of the signal, and on the basis of the nonlinear model, performing nonlinear echo cancellation of the signal in the time domain of the signal, however, the prior art of record fails to disclose or fairly suggest wherein generating a nonlinear model of the signal by receiving a pilot tone.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F Harold whose telephone number is 703-306-5836. The examiner can normally be reached on Monday - Friday 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jefferey F Harold  
Examiner  
Art Unit 2644

JFH  
September 13, 2004



**FORESTER W. ISEN**  
**SUPERVISORY PATENT EXAMINER**